

REMARKS

Claim Objection

Claims 1-54 have been objected to for using the term “nano-filler.” The Office Action objects to the term because the amended claims provide that one of the filler particles’ dimensions is 0.1 to 1.5 microns.

Applicants submit that the term is used in the claims in the same way as in the art, and the dimensions are consistent with such usage. Note the average platelet thickness of up to about 10 nanometers. Kindly compare the usage of this term in other patents, such as US 6,833,392 (“By use of the term ‘nano clay’ it is noted that such clays are inorganic minerals which have a high aspect ratio with at least one dimension of the particles therein in the nanometer range.”); US 6,737,463 (nanostructured powder has domain size less than 100 nm, where domain size for plate is thickness of the plate).

The platelet thicknesses of the present nano-fillers are of nanometer size.

Applicants respectfully request that the claim objection be withdrawn.

Rejection Under 35 U.S.C. § 103(a) over Watkins in View of Frisk

Claims 1-27 have been rejected as unpatentable over Watkins, WO 02/36196A1 in view of Frisk, U.S. Patent 6,117,541. Applicants respectfully traverse the rejection.

Applicants believe the claims to be patentable over the cited references for the reasons set forth in the last Reply, mailed February 22, 2005.

The Examiner responds to Applicants’ arguments by contending that one would use Frisk’s filler in an amount that would improve heat stability (or “various properties”) without making the Watkins materials stiff.

The heat stability of the Frisk materials, however, arise from the stiffness they impart to the unfilled material. Thus, the resistance to heat deformation is improved by stiffening the polyolefin with filler.

Further, Applicants respectfully repeat that the teachings of the references lead one away from making the suggested combination, as the Watkins reference emphasizes the need for flexibility, while the secondary reference clearly teaches that incorporating the clay platelets stiffens the material.

Accordingly, Applicants request that the rejection be withdrawn and the claims be reconsidered.

Rejection Under 35 U.S.C. § 103(a) over Watkins in View of Frisk, Fibiger, and Bagrodia

Claims 28-54 have been rejected as unpatentable over Watkins, WO 02/36196A1 in view of Frisk, U.S. Patent 6,117,541 and further in view of Fibiger et al., WO 00/47657 and Bagrodia et al., WO 01/92388A2. Applicants respectfully traverse the rejection.

Applicants submit that the combination of the Watkins and Frisk references fails to suggest the subject matter of these claims for the reasons already given in the last Reply and the further reasons above.

The Office Action states that the Fibiger and Bagrodia references were cited merely to show clay fillers in multilayer articles. Applicants reply that the combined references do not suggest incorporating nano-fillers into microlayers as in the present claims. Applicants point out that each and every limitation must be shown to be present in, or suggested by, the art. Calling 10+ layers “microlayers” does not change the fact that they are layers, but it does add a further

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limitation not present in, or suggested by, the references. Applicants respectfully draw the Examiner's attention to the specification, which defines and describes such materials. See, e.g., paragraphs 49-56. Note the claims recite a "microlayer polymeric composite layer."

Obviousness-Type Double Patenting

Claims 1-54 have been provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 20-25 of copending Application No. 09/704881 in view of Frisk, U.S. Patent 6,117,541.

Claims 20-25 of copending application 09/704881 provide:

20. A laminate formed by a method for improving adhesion between two adjacent layers of a laminate membrane, comprising the steps of:
 - (a) forming a laminate having a first thermoplastic layer adhered to an adjacent second thermoplastic layer and having an interfacial boundary between the first thermoplastic layer and the second thermoplastic layer;
 - (b) after a lag time when the laminate is below a temperature at which significant diffusion across the interfacial boundary takes place, annealing the laminate at a temperature above a thermal transition temperature of at least one polymeric component of at least one of the layers for a time sufficient for the at least one polymeric component to partially diffuse into the adjacent layer,wherein the first layer is a thermoplastic elastomer layer and the second layer is a thermoplastic polymeric barrier layer,
wherein the laminate is formed into a shape by blow molding before the annealing step, and
wherein the first layer comprises a thermoplastic polyurethane prepared from a polyester diol and the second layer comprises an ethylene-vinyl alcohol copolymer, and further wherein said blow molding step provides a bladder that is sealed and inflated after the annealing step.
21. A ball comprising a bladder prepared according to claim 20.
22. A shoe, comprising a bladder prepared according to claim 20.
23. A laminate according to claim 20, wherein said polyurethane includes at least about 50 percent by weight of the polyester diol.

24. A laminate according to claim 20, wherein said polyurethane includes at least about 60 percent by weight of the polyester diol.

25. A laminate according to claim 20, wherein the polyester diol has a weight average molecular weight of at least about 2000.

It would not have been obvious to incorporate the filler of the Frisk reference into the laminate of Application No. 09/704881 because the Frisk reference does not suggest that its filler has any effect on improved adhesion between adjacent layers of a laminate membrane.

Further, it would not have been obvious to incorporate the filler of the Frisk reference into the laminate of Application No. 09/704881 because the Frisk reference does not concern adhesion of adjacent laminate layers.

In addition, it would not have been obvious to incorporate the filler of the Frisk reference into the laminate of Application No. 09/704881 because the Frisk reference mentions neither thermoplastic polyurethanes nor ethylene-vinyl alcohol copolymers, so there is no motivation to modify either in view of the Frisk reference.

Nor is there motivation in the claims of Application No. 09/704881 themselves to add either polyolefin or filler of as described in Frisk.

Furthermore, the present claims are to a resilient membrane, while the Frisk reference teaches that incorporating its clay platelets increases stiffness, thus teaching away for both resilient layers and incorporating clay into layers if resiliency is desired. Thus, one skilled in the art would be led away from combining the teaching of the Frisk patent with a laminate formed by a method of Application No. 09/704881 if one desired a resilient membrane. s

Finally, neither reference suggests the subject matter of claims 28-54, having a microlayer polymeric composite layer.

For this reason, Applicants submit that the claims are patentable over the copending application.

CONCLUSION

Applicants believe that the claims are in condition for allowance, and an early allowance of the application is earnestly requested.

The Examiner is invited to telephone the undersigned if it would be helpful for resolving any issue.

Respectfully submitted,



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